



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/583,677

10/15/2008

Nalinkumar L. Patel

29610/CDT499

4533

4743 7590 09/28/2011
MARSHALL, GERSTEIN & BORUN LLP
233 SOUTH WACKER DRIVE
6300 WILLIS TOWER
CHICAGO, IL 60606-6357

EXAMINER

BOHATY, ANDREW K

ART UNIT

PAPER NUMBER

1786

NOTIFICATION DATE

DELIVERY MODE

09/28/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mgbdoCKET@marshallip.com

Office Action Summary

Application No.

10/583,677

Applicant(s)

PATEL ET AL.

Examiner

ANDREW K. BOHATY

Art Unit

1786

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-21 is/are pending in the application.
- 5a) Of the above claim(s) 1-12, 17 and 18 is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 13-16 and 19-21 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-943)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2011/01/18
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

1. This Office action is in response to the amendment filed July 21, 2011, which adds claims 19-21. Claims 1-21 are pending, where claims 1-12, 17, and 18 are withdrawn from consideration.

Response to Arguments

2. Applicant's arguments filed July 21, 2011 have been fully considered but they are not persuasive.

3. In regards to the applicant's arguments that the combination of Woo, Zheng, and Lecloux would not lead to the claimed invention because Woo teaches the electroluminescent material is a fluorescent material and not a phosphorescent material, Woo teaches the electroluminescent material is a polymer comprising a fluorene repeating unit and Lecloux teaches fluorene containing polymer, which are fluorescent, can be used as host material for phosphorescent dopants; therefore, one of ordinary skill in the art would expect electroluminescent material of Woo can be used as a host material for a phosphorescent dopant.

4. In regards to the applicant's arguments that a hole transporting material that can be used for a fluorescent device would be expected to be used for a hole transporting layer of a phosphorescent device, the examiner points out to the applicant that no information has been provided to so that this statement is true. Furthermore, it is well known in the art that NPB, a well known hole transporting material, can be used in a

Art Unit: 1786

hole transporting layer in both a fluorescent device and a phosphorescent device.

Therefore, the applicant's arguments are not persuasive.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

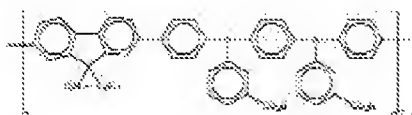
6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 13-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US 6,309,763) (hereafter "Woo") in view of Zheng et al. (US 2003/0082402) (hereafter "Zheng") and Lecloux et al. (US 2003/0096138) (hereafter "Lecloux").

8. Regarding claims 13-16 and 20, Woo teaches an organic light emitting diode comprising an anode, a hole transporting layer, an electroluminescent layer, and a cathode (column 14 lines 65-67 and column 15 lines 1-5). Woo teaches the hole transporting layer is composed of a polymer with the following structure,

Art Unit: 1786



(PFA Table 2). PFA reads on applicant's formula (I),

where Ar^1 and Ar^2 are unsubstituted phenyl groups, Ar^3 is a substituted phenyl group, and n is 1. Furthermore, PFA comprises another repeating unit and the repeating unit is substituted fluorene. Woo teaches that a hole injecting layer can be found between the anode and the hole transporting layer and the layer can be composed of PEDT, a conductive organic material (column 12 lines 15-25). Woo teaches the electroluminescent layer is also composed of a polymer (column 14 lines 65-67 and column 15 lines 1-5).

9. Woo does not teach where the polymer for the electroluminescent layer is a host material for a phosphorescent dopant.

10. Zheng teaches light emitting diodes comprising polymer electroluminescent layers (paragraph [0048]). Zheng teaches the electroluminescent layer comprises a polymer host and a light emitting material and teaches the light emitting material can be a phosphorescent material (paragraphs [0048] and [0049]). Zheng teaches the phosphorescent material can be a metal complex (paragraph [0049]). Zheng teaches that changing the light emitting material one can tune the emission wavelength of the device (paragraph [0049]).

11. Lecloux teaches fluorene polymers can be used as host materials for phosphorescent dopants in the light emitting layer of organic light emitting devices (paragraphs [0122] and [0123]).

Art Unit: 1786

12. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the light emitting device of Woo so the electroluminescent layer was doped with a phosphorescent dopant, such as a metal complex. The motivation would have been to tune the emission wavelength of the device.

13. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US 6,309,763) (hereafter "Woo") in view of Zheng et al. (US 2003/0082402) (hereafter "Zheng") and Lecloux et al. (US 2003/0096138) (hereafter "Lecloux") as applied to claims 13-16 and 20 above, and further in view of Li et al. (Synthetic Metals 1997, 84, 437-438) (hereafter "Li").

14. Regarding claim 19, Woo in view of Zheng and Lecloux does not teach where the polymer in the hole transporting layer is crosslinked.

15. Li teaches a polymer for a light emitting device (abstract). Li teaches that the polymer can become more robust if the polymer is crosslinked (page 428 left column second full paragraph).

16. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polymer layers of Woo so the layers were crosslinked. The motivation would have been to make the polymer more robust.

17. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US 6,309,763) (hereafter "Woo") in view of Zheng et al. (US 2003/0082402) (hereafter "Zheng") and Lecloux et al. (US 2003/0096138) (hereafter "Lecloux") as

Art Unit: 1786

applied to claims 13-16 and 20 above, and further in view of Tokito et al. (US 2003/0091862) (hereafter "Tokito").

18. Regarding claim 21, Woo in view of Zheng and Lecloux does not teach phosphorescent dopant is attached to the polymer.

19. Tokito teaches fluorene polymers for use in a light emitting device and teaches the fluorene polymer further comprises a phosphorescent dopant as a repeating unit (paragraph [0106]). Tokito teaches that attaching the phosphorescent dopant to the polymer chain one can increase the stability of the phosphorescent material and extend the lifetime of the device (paragraphs [0008]-[0010]).

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electroluminescent polymer of Woo in view of Zheng and Lecloux so the phosphorescent dopant is attached to the polymer. The motivation would have been to increase the stability of the phosphorescent dopant and extend the lifetime of the device.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 1786

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW K. BOHATY whose telephone number is (571)270-1148. The examiner can normally be reached on Monday through Thursday 8:00 am to 5:30 pm EST and every other Friday from 8:00 am to 4:30 pm EST.

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Chriss can be reached on (571)272-7783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

25. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A Chriss/
Supervisory Patent Examiner, Art Unit 1786

/A. K. B./
Andrew K. Bohaty
Patent Examiner, Art Unit 1786